We Claim:

1. A system for estimating engine flows, including exhaust gas flow from an exhaust manifold of an internal combustion engine to an intake manifold of the engine and airflow into an engine cylinder, the system comprising:

a flow control valve having a variable orifice positioned in an exhaust gas recirculation path between the exhaust manifold and intake manifold of the engine;

a fixed orifice area located in said path and downstream of said valve; and

a computer for determining a first signal related to pressure between said fixed orifice area and said flow control valve, determining a second signal related to pressure downstream of said fixed orifice area, calculating a third signal related to the exhaust gas flow based on said first signal and said second signal, and determining a fourth signal related to the airflow based on said second signal and said third signal.

2. The system recited in claim 1, wherein said computer further calculates a fuel injection amount based on said fourth signal.

3. The system recited in claim 2, further comprising an absolute pressure sensor for providing said second signal.

4. The system recited in claim 3, wherein said computer further calculates the exhaust flow based on a fifth signal related to a product of pressure downstream of said fixed orifice area and a difference between pressure downstream of said fixed orifice area and pressure between said fixed orifice area and said flow control valve.

5. The system recited in claim 1, wherein said valve is a pneumatically actuated valve.

6. The system recited in claim 1, wherein said valve is a stepper motor powered valve.

7. The system recited in claim 1, further comprising a differential pressure sensor for providing said first signal.

8. The system recited in claim 1, further comprising an absolute pressure sensor for providing said first signal.

9. A system for estimating engine flows, including exhaust gas flow from an exhaust manifold of an internal combustion engine to an intake manifold of the engine and airflow into an engine cylinder, the system comprising:

a flow control valve having a variable area orifice positioned in an exhaust gas recirculation path between the exhaust manifold and intake manifold of the engine;

a fixed orifice area located in said path and downstream of said valve;

a first pressure sensor coupled to said path between said variable area orifice and said fixed orifice area;

a second pressure sensor coupled to said path downstream of said fixed orifice area; and

a computer for reading said first pressure sensor and said second pressure sensor, calculating the exhaust gas flow based on said first pressure and said second pressure, and determining the cylinder airflow based on said second pressure and said calculated exhaust gas flow.

10. The system recited in claim 9, wherein said first pressure sensor is a differential pressure sensor.

11. The system recited in claim 9, wherein said first pressure sensor is an absolute pressure sensor.

12. The system recited in claim 9, wherein said second pressure is an absolute pressure sensor.

13. The system recited in claim 11, wherein said computer further calculates said exhaust gas flow based on a difference between said first and second pressure and based on said second pressure.

14. The system recited in claim 10, wherein said computer further filters the exhaust gas flow before determining the cylinder airflow.

15. The system recited in claim 13, wherein said computer further calculates said exhaust gas flow based on a product of said difference and said second pressure.

16. A method for estimating engine flows, including exhaust gas glow from an engine exhaust to an engine intake wherein the flow passes through a flow control valve and then a fixed area measuring orifice and airflow into an engine cylinder, the method comprising:

a flow control valve having a variable orifice positioned in an exhaust gas recirculation path between the exhaust manifold and intake manifold of the engine;

a fixed orifice area located in said path and downstream of said valve; and

a computer for determining a first signal related to pressure downstream of said fixed orifice area, determining a second signal related to differential pressure across said fixed orifice area, calculating a third signal related to the exhaust gas flow based on said first signal an said second signal, and determining a fourth signal related to the cylinder airflow based on said first signal an said third signal.

17. The system recited in claim 16, wherein said computer further calculates a fuel injection amount based on said fourth signal.

18. The system recited in claim 17, further comprising a differential pressure sensor for providing said second signal.

19. The system recited in claim 18, further comprising an absolute pressure sensor for providing said first signal.

20. The system recited in claim 19, wherein said computer further calculates said third signal based on a product of said first signal and said second signal.

21. The system recited in claim 20, wherein said computer further calculates said third signal based on a square root of said product of said first signal and said second signal.

22. A system for estimating engine flows, including exhaust gas flow from an exhaust manifold of an internal combustion engine to an intake manifold of the engine, the system comprising:

a flow control valve having a variable orifice positioned in an exhaust gas recirculation path between the exhaust manifold and intake manifold of the engine;

a fixed orifice area located in said path and downstream of said valve; and

a computer for determining a first signal related to pressure between said fixed orifice area and said flow control valve, determining a second signal related to pressure downstream of said fixed orifice area, and determining the exhaust gas flow based on said first signal and said second signal.

23. The system recited in claim 22, wherein said computer further determines said exhaust gas flow based on a difference between said first signal and said second signal.

24. The system recited in claim 23, wherein said computer further calculates said exhaust gas flow based on a product of said difference and said second signal.

25. The system recited in claim 22, wherein said first signal is pressure between said fixed orifice area and said flow control valve.

26. The system recited in claim 22, wherein said second signal is pressure downstream of said fixed orifice area.

27. The system recited in claim 22, wherein said first signal is a pressure difference across said fixed orifice area.

28. A system for estimating engine flows, including exhaust gas flow from an exhaust manifold of an internal combustion engine to an intake manifold of the engine and airflow into an engine cylinder, the system comprising:

a flow control valve having a variable orifice positioned in an exhaust gas recirculation path between the exhaust manifold and intake manifold of the engine;

a fixed orifice area located in said path and downstream of said valve; and

a computer for determining a first signal related to pressure between said fixed orifice area and said flow control valve, determining a second signal relate to pressure downstream of said fixed orifice area, determining a third signal related to the exhaust gas flow based on said first signal, and determining a fourth signal related to the cylinder airflow based on said second signal and said third signal.

29. The system recited in claim 28, wherein said third signal is further calculated based on said second signal.

30. The system recited in claim 28, wherein said first signal is based on a differential pressure sensor coupled across said fixed orifice area.

31. The system recited in claim 28, wherein said first signal is based on an absolute pressure sensor coupled between said fixed orifice area and said flow control valve.

32. The system recited in claim 28, wherein said valve is a pneumatically actuated valve.

33. The system recited in claim 28, wherein said valve is an electrically actuated valve.

34. The system recited in claim 28, wherein said valve is a stepper motor powered valve.